Day of Young Soil Scientists 2014

BACKGROUND VALUES OF COBALT IN FLEMISH AND EUROPEAN SOILS

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ABSTRACT. Despite the fact that some European countries established threshold values for cobalt (Co) in soil, no limit values for Co are defined in Flanders (Belgium). Moreover, relatively few data are available concerning the Co content of uncontaminated soils. In the present work, the occurrence of Cobalt in soil was assessed based on the analysis of two databases: The first dataset consisted of 80 non-contaminated soil samples from Flanders, selected out of a dataset of 2300 soil samples taken within the framework of soil investigations in the period 1995-2009. Secondly, the database of the European FOREGS project was used, including the analytical results of 837 topsoil samples and 784 subsoil samples. The Co content of the soil samples was in the range 0.27–255 mg/kg dry matter and background values in the range 11-14 mg/kg were calculated. Moreover, regression equations with major elements, clay and organic matter content as independent variables were established in order to predict the Co content in European soils (FOREGS dataset). Both in topsoil and subsoil samples, Fe_2O_3 and MnO were independent variables that most significantly explained the total content of Co in soil.

KEYWORDS: background value, contamination, multiple regression, soil, trace metals